TRANSITION networks

USER'S GUIDE

NDM-FTX-xxxxx-01

NDM-FTX-xxxxx-01 *(standard)*
NDM-FTX-xxxxx-01(L) *(low profile)*

Fast Ethernet Fiber/Dual Media NICs
• Fast Ethernet
• Copper and Fiber
• 10/100Base-TX and/or 100Base-FX

Transition Networks NDM-FTX series fast Ethernet dual media NIC *(Network Interface Card)* provides a 10/100Base-TX copper port and a 100Base-FX fiber port for installation flexibility in a mixed-media environment. The dual ports can also provide redundancy for critical applications. These NICs come in standard and low profile form factors, and include driver support for a variety of operating systems.

Part Number	Port One - Copper 10/100Base-TX	Port Two - Duplex Fiber-Optic 100Base-FX
NDM-FTX-ST-01 NDM-FTX-ST-01(L)	RJ-45 100 m *(328 ft)**	ST, 1300 nm multimode 2 km *(1.2 miles)**
NDM-FTX-SC-01 NDM-FTX-SC-01(L)	RJ-45 100 m *(328 ft)**	SC, 1300 nm multimode 2 km *(1.2 miles)**
NDM-FTX-MT-01 NDM-FTX-MT-01(L)	RJ-45 100 m *(328 ft)**	MT-RJ, 1300 nm multimode 2 km *(1.2 miles)**
NDM-FTX-SC5-01 NDM-FTX-SC5-01(L)	RJ-45 100 m *(328 ft)**	SC, 1310 nm single mode 5 km *(3.1miles)**
NDM-FTX-SC20-01 NDM-FTX-SC20-01(L)	RJ-45 100 m *(328 ft)**	SC, 1310 nm single mode 20 km *(12.4 miles)**
NDM-FTX-SB201-01 NDM-FTX-SB201-01(L)	RJ-45 100 m *(328 ft)**	SC, 1310 TX/1550nm RX single mode, single fiber 20 km *(12.4 miles)**
NDM-FTX-SB202-01 NDM-FTX-SB202-01(L)	RJ-45 100 m *(328 ft)**	SC, 1550 TX/1310 nm RX single mode, single fiber 20 km *(12.4 miles)**

Optional accessories sold separately

Part Number	Description
BTR-NDM-RPL	RPL, Bootable ROM Chip
BTR-NDM-PXE	PXE, Bootable ROM Chip

*Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network installation.

Installation

Checklist

Before installing the NDM-FTX, verify that the package contains the following items:

- NDM-FTX Board
- LAN Driver CD

Please notify your sales representative if any item is missing or damaged.

Description

The NDM-FTX module has a bootable ROM socket *(ROM chip sold separately)*. The two LED indicators, LINK/ACT and FDX located on the bracket, show network/board link, activities, collision, and full-duplex statuses. See Figure 1.
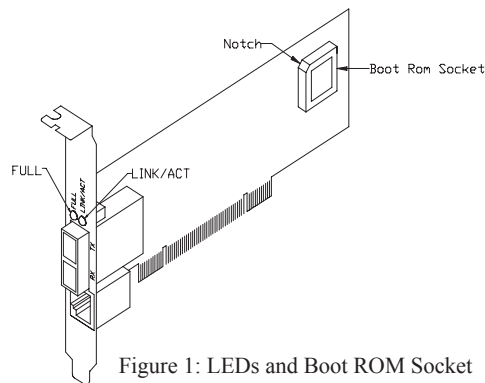

Figure 1: LEDs and Boot ROM Socket

NDM-FTX module installation

CAUTION: Wear a grounding strap and observe electrostatic discharge precautions when installing the NDM-FTX module. Failure to observe this caution could result in damage or failure of the NDM-FTX module.

To install the NDM-FTX module, do the following:

> **Important:** Install the NDM-FTX module in a "master slot" only.

1. Locate a master slot on the PC workstation or file server.
2. Remove the cover from the PC workstation or file server—keep all screws.
3. Remove and keep the screws holding the cover over the installation slot.
4. Carefully slide the NDM-FTX module into the "master slot," aligning the module with the slot guides.

Install the NDM-FTX module -- continued

5. Ensure that the module is firmly seated in the slot.
6. Use the screws from step "3" to secure the module to the workstation or file server housing.

NDM-FTX PCI module configuration

For motherboards with automatic PCI configuration:

- No specific setup is needed.
- You can enter the system BIOS setup menu to view or specify the interrupt (INT) line of the PCI slots.

For motherboards with bus master and interrupt jumpers:

- Enable bus master operation in a selected PCI slot and select an INT request line (IRQ) level, using the appropriate motherboard jumper.
- Enable I/O on the NDM-FTX, PCI slot.

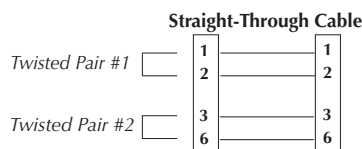## PCI bus system and configuration

- Ensure that the PCI machine supports master slots, INT multiple sharing and timing compatibility.
- DO NOT install NDM-FTX in PCI slave slots. Please refer to your PCI system manual and select the appropriate configuration settings.
- When installing multiple NDM-FTX boards in a server station, you should correctly configure the IRQ settings of the PCI slot.
- Up to four NDM-FTX modules can be installed in a PCI file server running NetWare operating system.
- NDM-FTX server modules share the same INT line with the driver supporting multiple INT services at a time. The IRQ of each NDM-FTX module should not conflict with other boards.
- Operation in full or half-duplex mode is configured by LAN driver options. The operating mode should match the working status of the remote link device.
- Use EMM386 version 4.49 or higher, and install both DOS and EMM386 from the same DOS package to avoid software problems.

Cable Specifications

Copper cable

10BASE-T UTP Category 3, 4, 5 or higher
100Base-TX UTP Category 5 or higher
Gauge: 24 to 22AWG
Attenuation: 22.0 dB /100m @ 100 MHz

- Straight-through MDI twisted-pair cable must be used.
- Shielded STP or unshielded UTP twisted-pair cable may be used.
- Pins 1 and 2, 3 and 6 are the two active pairs in an Ethernet network.
- RJ-45 Pin-out: Pin 1 = TD+, Pin 2 = TD-, Pin 3 = RD+, Pin 6 = RD-
- Use only dedicated wire pairs for the active pins:
  (e.g., blue/white and white/blue, orange/white and white/orange, etc.)
- DO NOT use flat or silver satin wire.

Straight-Through Cable

Twisted Pair #1   1 2 — 1 2

Twisted Pair #2   3 6 — 3 6

The physical characteristics must meet or exceed the IEEE 802.3 specification.

Fiber cable

Bit error rate: <10-9
Single mode fiber *(recommended)*:   9 µm
Multimode fiber *(recommended)*:   62.5/125 µm
Multimode fiber *(optional)*:   100/140, 85/140, 50/125 µm

NDM-FTX-ST-01(x), NDM-FTX-SC-01(x), NDM-FTX-MT-01(x) 1300 nm multimode
Fiber optic transmitter power: min: -19.0 dBm   max: -14.0 dBm
Fiber optic receiver sensitivity: min: -31.0 dBm   max: -17.0 dBm
Link budget: 12.0 dB

NDM-FTX-SC5-01(x)   1310 nm single mode
Fiber optic transmitter power: min: -19.0 dBm   max: -14.0 dBm
Fiber optic receiver sensitivity: min: -31.0 dBm   max: -7.5 dBm
Link budget: 12.0 dB

NDM-FTX-SC20-01(x)   1310 nm single mode
Fiber optic transmitter power: min: -15.0 dBm   max: -8.0 dBm
Fiber optic receiver sensitivity: min: -31.0 dBm   max: 0.0 dBm
Link budget: 16.0 dB

NDM-FTX-SB201-01(x)   1310 TX/1550 RX nm single mode
                                    single stand
Fiber optic transmitter power: min: -14.0 dBm   max: -8.0 dBm
Fiber optic receiver sensitivity: min: -32.0 dBm   max: 0.0 dBm
Link budget: 18.0 dB

Fiber cable -- continued

NDM-FTX-SB202-01(x)   1550 TX/1310 RX nm single mode
                                    single stand
Fiber optic transmitter power: min: -14.0 dBm   max: -8.0 dBm
Fiber optic receiver sensitivity: min: -32.0 dBm   max: 0.0 dBm
Link budget: 18.0 dB

The fiber optic transmitters on the device meet Class I Laser safety requirements per IEC-825/CDRH standard and comply with 21CRF1040.10 and 21CRF1040.11.

Technical Specifications

For models NDM-FTX-xxxxx-01 and NDM-FTX-xxxxx-01(L)

Standards: IEEE 802.3
Expansion bus standard: PCI 2.1, 2.2
Data rate: 10/100Mpbs twisted pair media
                          100Mbps fiber media
LED: LINK/ACT *(on the bracket)*
                          ON = communication link; flashing = activity on link
                          FDX *(full duplex link)*; ON = full duplex link
Drivers: • NetWare Server 4.1x, 5.x
                          • Netware DOS Client ODI
                          • Windows 95, 98, 2000, 2003, XP, NT4.0
                          • Linux
Boot server support: Novell RPL Boot ROM; PXE Boot ROM
PCB dimensions: 2.5” W x 5.9” D x 0.85” H
                          (63.5 mm W x 149.9 mm D x 21.6 mm H)
Weight: 3 oz. *(91g)* approximate
Power consumption: 1.0A @ +5VDC
MTBF   198,853 hours *(Bellcore7 V5.0)*
Operating temp   0°C to 50°C *(32°F to 122°F)*
Storage temp: -25°C to 85°C *(-13°F to 185°F)*
Humidity: 5% to 90%, non-condensing
Altitude: 0 to 10,000 feet
Warranty: Lifetime

WARNING: Visible and invisible laser radiation when open: DO NOT stare into the beam or view directly with optical instruments. Failure to observe this warning could result in damage to your vision or blindness.

CAUTION: Use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

The information in this manual is subject to change without further notice.

Troubleshooting

Diagnostics LEDs and Boot ROM

LEDS

The LINK/ACT LED lights when a fiber cable or twisted pair cable connection is good. It blinks to indicate activity.

The collision and full-duplex LED report board operating status.

Boot ROM

To add the remote boot feature to a workstation, insert the Boot ROM into the ROM socket. See Figure 1 on page 2.

After power UP, the LINK/ACT LED should light; if not, check the following:

1. Confirm that the NDM-FTX module is properly inserted into the PC workstation master slot or file-server master slot.

2. Confirm that the PC workstation or the file server is properly connected to a power source and with the power source turned ON.

3. Check the fiber cable and twisted-pair copper cables for proper connection.

4. Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600 if those steps fail to produce the desired result.

Note: To connect this device to a router, bridge, or switch, please refer to the corresponding technical manual for the device.

TRANSITION networks

Declaration of Conformity

Name of Mfg:	Transition Networks, 6475 City West Parkway, Minneapolis, MN 55344 U.S.A.
Model:	NDM-FTX-xxxxx-0l and NDM-FTX-xxxxx-0l(L) Network Interface Cards
Part Number:	NDM-FTX-ST-01(x), NDM-FTX-SC-01(x), NDM-FTX-MT-01(x), NDM-FTX-SC5-01(x), NDM-FTX-SC20-01(x), NDM-FTX-SB201-01(x), NDM-FTX-SB202-01(x)
Regulation:	EMC Directive 89/336/EEC
Purpose:	To declare that the NDM-FTX-xxxxx-01 and NDM-FTX-xxxxx-0l(L), to which this declaration refers, is in conformity with the following standards:

CISPR 22:1997+A1:2000; EN 55022:1998+A1:2000 Class A; FCC Part 15 Subpart B; 21CFR subpart J

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Stephen Anderson, Vice-President of Engineering   June 30, 2005
                                                                                        Date

---

Contact Us

Technical support

Technical support is available at techsupport@transition.com

*   US and Canada: 1-800-260-1312 *(24 hours)*
*   International: 00-1-952-941-7600 *(24 hours)*

Transition now

Chat live via the Web with Transition Networks Technical Support. Log onto www.transition.com and click the Transition Now link.

Web-based seminar

Transition networks provides seminars via live, web-based training. Log onto www.transition.com and click the Learning Center link.

Email

Ask a question anytime by sending an email to our technical support staff: techsupport@transition.com

Address

Transition Networks

6475 City West Parkway

Minneapolis, MN 55344, U.S.A.

Telephone:	952-941-7600,
Toll free:	800-526-9267
Fax:	952-941-2322

Compliance Information

CISPR22/EN55022 Class A, CE Mark, CISPR22/EN55022 Class A + EN55024, CE Mark

FCC regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.
Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European regulations

Caution: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
Achtung! Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fäll ist der Benutzer für Gegenmaßnahmen verantwortlich.

Attention! Ceci est un produit de Classe A. Dans un environment domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilsateur de prende les measures spécifiques appropriées.

CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentlickes Telekommunikationsnetz in den EG-Mitgliedstaaten verstösst gegen die jeweligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

Trademark notice

All registered trademarks and trademarks are the property of their respective owners.

Copyright restrictions